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Claims: I claim:

1. A solid-chemical composition which provides a source of inorganic nutrients comprising:
   a. A soluble source of inorganic nutrients comprising from about 25.0% to 99.5% by weight of the composition selected from one or more of the group consisting of water-soluble forms of inorganic nitrogen, inorganic phosphorus, and inorganic potassium; and
   b. A geochemical-binder system comprising salts of phosphoric acid from about 0.5% to 13% by weight of the composition.

2. The solid-chemical composition of Claim 1, whereby said forms of inorganic nitrogen are selected from one or more of the group consisting of ammonium nitrate, sodium nitrate, potassium nitrate, sodium-potassium nitrate, calcium nitrate, ammonium sulfate, ammonium thiosulfate, diammonium phosphate, urea, urea-ammonium nitrate (UAN), isobutyidene diurea (IBDU), sulfur-coated urea and urea formaldehyde.

3. The solid-chemical composition of Claim 1, whereby said forms of inorganic phosphorus are selected from one or more of the group consisting of diammonium phosphate, mono-ammonium phosphate, disodium phosphate, monosodium phosphate, potassium phosphate, rock phosphate, superphosphate, triple superphosphate, sodium tripolyphosphate, potassium tripolyphosphate, sodium pyrophosphate and potassium pyrophosphate.

4. The solid-chemical composition of Claim 1, whereby said forms of inorganic potassium are selected from one or more of the group consisting of potassium chloride, potassium-magnesium sulfate, potassium nitrate, sodium-potassium nitrate, potassium sulfate, and potassium phosphate.

5. The solid-chemical composition of Claim 1, whereby said salts of phosphoric acid are selected from one or more of the group consisting of sodium hexametaphosphate, sodium trimetaphosphate, potassium hexametaphosphate, and potassium tetrametaphosphate.

6. The solid-chemical composition of Claim 1, whereby said inorganic source of nitrogen is ammonium-free.

7. The solid-chemical composition of Claim 6, whereby said ammonium-free source of inorganic nitrogen is selected from one or more of the group consisting of sodium nitrate, sodium-potassium nitrate, potassium nitrate and calcium nitrate.

8. The solid-chemical composition of Claim 6, whereby said ammonium-free source of inorganic nitrogen comprises from about 5% to 95% by weight of the composition.

9. The solid-chemical composition of Claim 1, further comprising a source of micronutrients selected from one or more of the group of elements consisting of sulfur, calcium, magnesium, boron, copper, iron, manganese, molybdenum and zinc.

10. The solid-chemical composition of Claim 1, where said source of micronutrients is further selected from one or more of the group consisting of calcium sulfate, calcium chloride, calcitic lime, dolomite, magnesium sulfate, potassium sulfate, potassium-magnesium sulfate, ammonium thiosulfate, ammonium sulfate, borax, boric acid, sodium pentaborate, sodium tetraborate, cupric chloride, copper sulfate, ferrous sulfate, manganese sulfate, ammonium molybdate, sodium molybdate, zinc oxide and zinc sulfate.

11. The solid-chemical composition of Claim 1, further comprising a chelating agent.

12. The solid-chemical composition of Claim 11, whereby said chelating agent is selected from one or more of the group consisting of citric acid, sodium citrate, potassium citrate, humic acid, fulvic acid, nitrilotriacetic acid (NTA), and ethylenediaminetetraacetic acid (EDTA).

13. The solid-chemical composition of Claim 11, whereby said chelating agent comprises from about 0.01% to 3% by weight of the composition.

14. The solid-chemical composition of Claim 1, further comprising a disintegrant.

15. The solid-chemical composition of Claim 14, whereby said disintegrant is selected from one or more of the group consisting of sodium bicarbonate and sodium bentonite.

16. The solid-chemical composition of Claim 14, whereby said disintegrant comprises from about 0.05% to 5% by weight of the composition.

17. The solid-chemical composition of Claims 1 prepared in the forms of granules, briquettes, pellets, tablets, spikes, or other formed shapes.

18. The solid-chemical composition of Claim 1 produced by the method of high-shear granulation.

19. A solid-chemical composition which provides a slow-release source of inorganic nutrients comprising:
    a. A soluble source of inorganic nutrients comprising from about 25.0% to 99.5% by weight of the composition selected from one or more of the group consisting of water-soluble forms of inorganic nitrogen, inorganic phosphorus, inorganic potassium and inorganic sulfur; and
    b. A slow release geochemical-binder system.

20. The solid-chemical composition of Claim 19, whereby said forms of inorganic nitrogen are selected from one or more of the group consisting of ammonium nitrate, sodium nitrate, potassium nitrate, sodium-potassium nitrate, calcium nitrate, ammonium sulfate, ammonium thiosulfate, diammonium phosphate, urea, urea-ammonium nitrate (UAN), isobutyidene diurea (IBDU), sulfur-coated urea and urea formaldehyde.

21. The solid-chemical composition of Claim 19, whereby said forms of inorganic phosphorus are selected from one or more of the group consisting of diammonium phosphate, mono-ammonium phosphate, disodium phosphate, monosodium phosphate, potassium phosphate, rock phosphate, superphosphate, triple superphosphate, sodium tripolyphosphate, potassium tripolyphosphate, sodium pyrophosphate and potassium pyrophosphate.

22. The solid-chemical composition of Claim 19, whereby said forms of inorganic potassium are selected from one or more of the group consisting of potassium chloride, potassium-magnesium sulfate, potassium nitrate, sodium-potassium nitrate, potassium sulfate, and potassium phosphate.

23. The solid-chemical composition of Claim 19, whereby said inorganic source of nitrogen is ammonium-free.

24. The solid-chemical composition of Claim 23, whereby said ammonium-free source of inorganic nitrogen is selected from one or more of the group consisting of sodium nitrate, sodium-potassium nitrate, potassium nitrate and calcium nitrate.

25. The solid-chemical composition of Claim 23, whereby said ammonium-free source of inorganic nitrogen comprises from about 5% to 95% by weight of the composition.

26. The solid-chemical composition of Claim 19, further comprising a source of micronutrients selected from one or more of the group of elements consisting of sulfur, calcium, magnesium, boron, copper, iron, manganese, molybdenum and zinc.

27. The solid-chemical composition of Claim 26, where said source of micronutrients is further selected from one or more of the group consisting of calcium sulfate, calcium chloride, calcitic lime, dolomite, magnesium sulfate, potassium sulfate, potassium-magnesium sulfate, ammonium thiosulfate, ammonium sulfate, borax, boric acid, sodium pentaborate, sodium tetraborate, cupric chloride, copper sulfate, ferrous sulfate, manganese sulfate, ammonium molybdate, sodium molybdate, zinc oxide and zinc sulfate.

28. The solid-chemical composition of Claim 19, further comprising a chelating agent.

29. The solid-chemical composition of Claim 28, whereby said chelating agent is selected from one or more of the group consisting of citric acid, sodium citrate, potassium citrate, humic acid, fulvic acid, nitrilotriacetic acid (NTA), and ethylenediaminetetraacetic acid (EDTA).

30. The solid-chemical composition of Claim 28, whereby said chelating agent comprises from about 0.01% to 3% by weight of the composition.

31. The solid-chemical composition of Claim 19, further comprising a disintegrant.

32. The solid-chemical composition of Claim 31, whereby said disintegrant is selected from one or more of the group consisting of sodium bicarbonate and sodium bentonite.

33. The solid-chemical composition of Claim 31, whereby said disintegrant comprises from about 0.05% to 5% by weight of the composition.

34. A slow release geochemical-binder system for solid-chemical inorganic nutrient compositions wherein said geochemical-binder system consists of:
    a. salts of phosphoric acid from about 0.5% to 13% by weight of the composition; and
    b. an inorganic binder matrix from about 1% to 70% by weight of the composition.

35. The solid-chemical composition of Claim 19 whereby said salts of phosphoric acid are selected from one or more of the group consisting of sodium hexametaphosphate, sodium trimetaphosphate, potassium hexametaphosphate, and potassium tetrametaphosphate.

36. The solid-chemical composition of Claim 34 whereby said salts of phosphoric acid are selected from one or more of the group consisting of sodium hexametaphosphate, sodium trimetaphosphate, potassium hexametaphosphate, and potassium tetrametaphosphate.

37. The solid-chemical composition of Claim 34, whereby said inorganic binder matrix comprises one or more selected from the group consisting of substantially low-solubility carbonates and carbonate minerals; substantially low-solubility phosphates and phosphate minerals; and substantially low-solubility sulfates and sulfate minerals.

38. The solid-chemical composition of Claim 34, whereby said inorganic binder matrix comprises from about 0.5% to 70% by weight of the composition.

39. The solid-chemical composition of Claim 36, whereby said substantially low-solubility carbonates and carbonate minerals in said inorganic binder matrix comprise one or more selected from the group consisting of calcium carbonate, magnesium carbonate, calcium-magnesium carbonate, ferrous carbonate, manganese carbonate, limestone, dolomite, siderite, rhodochrosite and other substantially low-solubility carbonates.

40. The solid-chemical composition of Claim 36, whereby said substantially low-solubility carbonates and carbonate minerals in said inorganic binder matrix comprise from about 0.5% to 65% by weight of the composition.

41. The solid-chemical composition of Claim 36, whereby said substantially low-solubility phosphates and phosphate minerals in said inorganic binder matrix comprise one or more selected from the group consisting of calcium phosphate, magnesium phosphate, calcium-magnesium phosphate, rock phosphate, apatite-group minerals and other low-solubility phosphates.

42. The solid-chemical composition of Claim 36, whereby said substantially low-solubility phosphates and phosphate minerals in said inorganic binder matrix comprise from about 0.05% to 50% by weight of the composition.

43. The solid-chemical composition of Claim 36, whereby said substantially low-solubility sulfates and sulfate minerals in said inorganic binder matrix comprise one or more selected from the group consisting of calcium sulfate, magnesium sulfate, gypsum, anhydrite, barite, alunite and jarosite.

44. The solid-chemical composition of Claim 36, whereby said substantially low-solubility sulfates and sulfate minerals in said inorganic binder matrix comprise from about 0.03% to 30% by weight of the composition.

45. The solid-chemical composition of Claim 34 further comprising a source of additional inorganic binders selected from one or more of the group consisting of metallic oxides, hydroxides, and oxyhydroxides.

46. The solid-chemical composition of Claim 36 further comprising a source of additional inorganic binders selected from one or more of the group consisting of metallic oxides, hydroxides, and oxyhydroxides.

47. The solid-chemical composition of Claim 44, whereby the metallic elements in said metallic oxides, hydroxides, and oxyhydroxides are selected from one or more of the group consisting of calcium, magnesium, boron, copper, iron, manganese, molybdenum and zinc.

48. The solid-chemical composition of Claim 44, whereby said source of additional binders comprises from about 0.02% to 20% by weight of the composition.

49. The solid-chemical composition of Claim 19 prepared in the forms of granules, briquettes, pellets, tablets, spikes, or other formed shapes.

50. The solid-chemical composition of Claim 19 produced by the method of high-shear granulation.

51. A high-shear granulation method of preparing the solid-chemical composition of Claim 1 which comprises:
    i. The addition of sufficient water to said solid-chemical composition in a pugmill, mechanical mixer or rotating-bin device to produce a slurry or paste-like mixture;
    ii. drying the slurry or paste-like mixture prepared in step (ii) to produce a granular solid; and
    iii. Mechanically sieving or screening the granular solid prepared in step (iii) to obtain the desired particle size range.

52. A high-shear granulation method of preparing the solid-chemical composition of Claim 19 which comprises:

i. The addition of sufficient water to said solid-chemical composition prepared in step (i) in a pugmill, mechanical mixer or rotating-bin device to produce a slurry or paste-like mixture;

ii. drying the slurry or paste-like mixture prepared in step (ii) to produce a granular solid; and

iii. Mechanically sieving or screening the granular solid prepared in step (iii) to obtain the desired particle size range.

53. A solid-chemical nutrient composition comprising:

a. A soluble source of inorganic nitrogen from about 0% to 95% by weight of the composition;

b. A soluble source of inorganic phosphorus from about 0% to 95% by weight of the composition;

c. A soluble source of inorganic potassium from about 0% to 95% by weight of the composition; and

d. Salts of phosphoric acid from about 0.25% to 10% by weight of the composition.

54. A slow-release solid-chemical nutrient composition comprising:

a. A soluble source of inorganic nitrogen from about 0% to 95% by weight of the composition;

b. A soluble source of inorganic phosphorus from about 0% to 95% by weight of the composition;

c. A soluble source of inorganic potassium from about 0% to 95% by weight of the composition;

d. Salts of phosphoric acid from about 0.25% to 10% by weight of the composition;

e. Calcium carbonate from about 1% to 70% by weight of the composition; and

f. calcium phosphate from about 0.1% to 30% by weight of the composition.